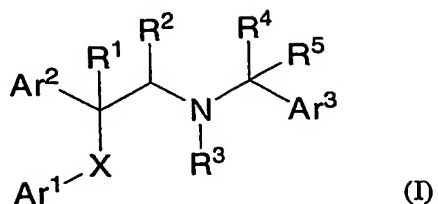


## WHAT IS CLAIMED IS:

1. A compound of structural formula I:



- 5 or a pharmaceutically acceptable salt thereof, wherein:

R<sup>1</sup> is selected from:

- (1) hydrogen,  
 (2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents,  
 (3) halogen, and  
 10 (4) -OR<sup>d</sup>;

R<sup>2</sup> is selected from:

- (1) hydrogen,  
 (2) C<sub>1-4</sub>alkyl, and  
 (3) aryl,  
 15 wherein each alkyl and aryl moiety is unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents ;

R<sup>3</sup> is selected from:

- (1) hydrogen, and  
 (2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents;

R<sup>4</sup> is selected from:

- 20 (1) hydrogen,  
 (2) C<sub>1-10</sub>alkyl,  
 (3) C<sub>2-10</sub>alkenyl,  
 (4) C<sub>2-10</sub>alkynyl,  
 (5) C<sub>1-10</sub>alkyloxycarbonyl-, and  
 25 (6) C<sub>3-10</sub>cycloalkyl,  
 (7) aryl-C<sub>1-6</sub>alkyl-, and  
 (8) heteroaryl-C<sub>1-6</sub>alkyl-,

- wherein each alkyl, alkenyl, and alkynyl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>a</sup> and each aryl, heteroaryl, and cycloalkyl moiety is  
 30 unsubstituted or substituted with one, two or three substituents independently selected from R<sup>b</sup> and oxo;

R<sup>5</sup> is selected from:

- (1) hydrogen, and
- (2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents;

Ar<sup>1</sup> is selected from:

- 5 (1) C<sub>1-10</sub>alkyl,
- (2) C<sub>2-10</sub>alkenyl,
- (3) C<sub>2-10</sub>alkynyl,
- (4) C<sub>3-10</sub>cycloalkyl,
- (5) cycloheteroalkyl,
- 10 (6) aryl, and
- (7) heteroaryl,

wherein each alkyl, alkenyl, and alkynyl moiety is unsubstituted or substituted with one to three substituents independently selected from R<sup>a</sup>;

each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup>; and

15 each cycloalkyl and cycloheteroalkyl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup> and oxo;

Ar<sup>2</sup> is selected from:

- 20 (1) -OR<sup>d</sup>,
- (2) -CO<sub>2</sub>R<sup>d</sup>,
- (3) C<sub>3-10</sub>cycloalkyl,
- (4) cycloheteroalkyl,
- (5) aryl, and
- (6) heteroaryl,

25 wherein each cycloalkyl, cycloheteroalkyl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup> and oxo; and each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup>;

Ar<sup>3</sup> is selected from:

- 30 (1) cycloalkyl,
- (2) aryl, and
- (3) heteroaryl,

wherein each cycloalkyl, aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup>;

X is selected from:

- 35 (1) a bond,

- (2) C<sub>1-4</sub>alkyl,
- (3) oxygen,
- (4) sulfur, and
- (5) -NR<sup>c</sup>-,

5 provided that when X is oxygen, sulfur, or -NR<sup>c</sup>-, then R<sup>1</sup> is hydrogen or C<sub>1-4</sub>alkyl and Ar<sup>2</sup> is not -OR<sup>d</sup>;

each R<sup>a</sup> is independently selected from:

- (1) -OR<sup>d</sup>,
- (2) -NR<sup>c</sup>S(O)<sub>m</sub>R<sup>d</sup>,
- 10 (3) halogen,
- (4) -SR<sup>d</sup>,
- (5) -S(O)<sub>m</sub>R<sup>d</sup>,
- (6) -S(O)<sub>m</sub>NR<sup>c</sup>R<sup>d</sup>,
- (7) -NR<sup>c</sup>R<sup>d</sup>,
- 15 (8) -C(O)R<sup>d</sup>,
- (9) -CO<sub>2</sub>R<sup>d</sup>,
- (10) -CN,
- (11) -C(O)NR<sup>c</sup>R<sup>d</sup>,
- (12) -NR<sup>c</sup>C(O)R<sup>d</sup>,
- 20 (13) -NR<sup>c</sup>C(O)OR<sup>d</sup>,
- (14) -NR<sup>c</sup>C(O)NR<sup>c</sup>R<sup>d</sup>,
- (15) -CF<sub>3</sub>,
- (16) -OCF<sub>3</sub>, and
- (17) cycloheteroalkyl;

25 each R<sup>b</sup> is independently selected from:

- (1) R<sup>a</sup>,
- (2) C<sub>1-10</sub>alkyl,
- (3) aryl,
- (4) arylC<sub>1-4</sub>alkyl,
- 30 (5) heteroaryl, and
- (6) heteroarylC<sub>1-4</sub>alkyl,

wherein aryl and heteroaryl moieties are unsubstituted or substituted with one, two or three substituents independently selected from R<sup>f</sup>;

R<sup>c</sup> and R<sup>d</sup> are independently selected from:

- 35 (1) hydrogen,

- (2) C<sub>1-10</sub>alkyl,
- (3) C<sub>2-10</sub>alkenyl,
- (4) cycloalkyl,
- (5) cycloalkyl-C<sub>1-10</sub>alkyl-,
- 5 (6) cycloheteroalkyl,
- (7) cycloheteroalkyl-C<sub>1-10</sub>alkyl-,
- (8) aryl,
- (9) heteroaryl,
- (10) aryl-C<sub>1-10</sub>alkyl-, and
- 10 (11) heteroaryl-C<sub>1-10</sub>alkyl-, or

R<sup>c</sup> and R<sup>d</sup> together with the atom(s) to which they are attached form a heterocyclic ring of 4 to 7 members containing 0-2 additional heteroatoms independently selected from oxygen, sulfur and N-R<sub>g</sub>, each R<sup>c</sup> and R<sup>d</sup> are unsubstituted or substituted with one to three substituents selected from R<sup>h</sup>; R<sup>e</sup> is selected from:

- 15 (1) hydroxy,
- (2) methoxy-,
- (3) trifluoromethoxy-,
- (4) methylcarbonyloxy-,
- (5) halogen, and
- 20 (6) cyano;

R<sup>f</sup> is selected from:

- (1) halogen,
- (2) methyl,
- (3) cyano, and
- 25 (4) amino;

each R<sub>g</sub> is independently selected from

- (1) C<sub>1-10</sub>alkyl, and
- (2) -C(O)R<sup>i</sup>;

each R<sup>h</sup> is independently selected from:

- 30 (1) halogen,
- (2) C<sub>1-10</sub>alkyl,
- (3) -O-C<sub>1-4</sub>alkyl,
- (4) -S-C<sub>1-4</sub>alkyl,
- (5) -CN,
- 35 (6) -NO<sub>2</sub>,

(7)  $-\text{CF}_3$ , and

(8)  $-\text{OCF}_3$ ;

each  $\text{R}^1$  is independently selected from:

(1) hydrogen,

(2)  $\text{C}_{1-10}$ alkyl,

(3)  $\text{C}_{2-10}$  alkenyl,

(4) cycloalkyl,

(5) cycloalkyl- $\text{C}_{1-10}$ alkyl-,

(6) cycloheteroalkyl,

(7) cycloheteroalkyl- $\text{C}_{1-10}$  alkyl-,

(8) aryl,

(9) heteroaryl,

(10) aryl- $\text{C}_{1-10}$ alkyl-, and

(11) heteroaryl- $\text{C}_{1-10}$ alkyl-; and

m is selected from 1 and 2.

2. The compound according to Claim 1, wherein:

X is selected from:

(1) a bond,

(2)  $-\text{CH}_2-$ ,

(3) oxygen, and

(4) sulfur,

provided that when X is oxygen, or sulfur, then  $\text{R}^1$  is hydrogen or  $\text{C}_{1-4}$ alkyl, and  $\text{Ar}^2$  is not  $-\text{OR}^d$ ;

each  $\text{R}^a$  is independently selected from:

(1)  $-\text{OR}^d$ ,

(2)  $-\text{NHS}(\text{O})_2\text{R}^d$ ,

(3) halogen,

(4)  $-\text{SR}^d$ ,

(5)  $-\text{S}(\text{O})_2\text{R}^d$

(6)  $-\text{S}(\text{O})_2\text{NR}^c\text{R}^d$ ,

(7)  $-\text{NR}^c\text{R}^d$ ,

(8)  $-\text{C}(\text{O})\text{R}^d$ ,

(9)  $-\text{CO}_2\text{R}^d$ ,

(10)  $-\text{CN}$ ,

- (11)  $-C(O)NR^cR^d$ ,
- (12)  $-NHC(O)R^d$ ,
- (13)  $-NHC(O)OR^d$ ,
- (14)  $-NHC(O)NR^cR^d$ ,
- 5 (15)  $-CF_3$ , and
- (16)  $-OCF_3$ ;

each  $R^b$  is independently selected from:

- (1)  $R^a$ ,
- (2)  $C_{1-3}$ alkyl,
- 10 (3) phenyl, and
- (4) heteroaryl,

wherein aryl and heteroaryl moieties are unsubstituted or substituted with one or two substituents independently selected from  $R^f$ ;

each  $R^c$  is selected from hydrogen and methyl, and each  $R^d$  is selected from:

- 15 (1) hydrogen,
- (2)  $C_{1-6}$ alkyl,
- (3) cycloalkyl,
- (4) cycloalkyl- $C_{1-3}$ alkyl-,
- (5) cycloheteroalkyl,
- 20 (6) cycloheteroalkyl- $C_{1-3}$ alkyl-,
- (7) phenyl,
- (8) pyridyl,
- (9) triazolyl,
- (10) pyrazolyl
- 25 (11) phenyl- $C_{1-3}$ alkyl-,
- (12) pyridyl- $C_{1-3}$ alkyl-,
- (13) triazolyl- $C_{1-3}$ alkyl-, and
- (14) pyrazolyl- $C_{1-3}$ alkyl-,

wherein each  $R^c$  and  $R^d$  may be unsubstituted or substituted with one to three substituents selected from  $R^h$ ;

and pharmaceutically acceptable salts thereof.

3. The compound according to Claim 2, wherein:  $R^1$ ,  $R^3$  and  $R^5$  are each hydrogen;  $R^2$  is selected from  $C_{1-4}$  alkyl and phenyl; and pharmaceutically acceptable salts thereof.

4. The compound according to Claim 3, wherein:

R<sup>4</sup> is selected from:

- (1) C<sub>1-6</sub>alkyl,
- (2) C<sub>1-5</sub>alkyloxycarbonyl-, and
- 5 (3) C<sub>3-6</sub>cycloalkyl,
- (4) aryl-C<sub>1-3</sub>alkyl-, and
- (5) heteroaryl-C<sub>1-3</sub>alkyl-,

wherein each alkyl moiety is unsubstituted or substituted with one to two substituents independently selected from R<sup>a</sup> and each aryl, heteroaryl and cycloalkyl moiety is unsubstituted or substituted with a hydroxy or oxo substituent;

Ar<sup>1</sup> is selected from:

- (1) C<sub>1-10</sub>alkyl,
- (2) C<sub>3-10</sub>cycloalkyl,
- (3) cycloheteroalkyl,
- 15 (4) phenyl, and
- (5) heteroaryl,

wherein each alkyl moiety is unsubstituted or substituted with one to three substituents independently selected from R<sup>a</sup>,

each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup>, and

each cycloalkyl and cycloheteroalkyl moiety is unsubstituted or substituted with one to four substituents independently selected from R<sup>b</sup> and oxo;

Ar<sup>2</sup> is selected from: aryl and heteroaryl, wherein aryl and heteroaryl are optionally substituted with one to four substituents independently selected from R<sup>b</sup>;

and pharmaceutically acceptable salts thereof

5. The compound according to Claim 4, wherein: Ar<sup>3</sup> is cyclohexyl or phenyl,

unsubstituted or substituted with one or two substituents selected from halogen, cyano, -CH<sub>3</sub>, -OCH<sub>3</sub>, -CF<sub>3</sub>, -OCF<sub>3</sub>, -CO<sub>2</sub>CH<sub>3</sub>, -SCH<sub>3</sub>, -S(O)CH<sub>3</sub>, -S(O)<sub>2</sub>CH<sub>3</sub>, -C(O)N(CH<sub>3</sub>)<sub>2</sub>, phenyl, pyridinyl, pyrimidinyl, pyrazolyl, pyrrolyl, triazolyl, -NH-R<sup>d</sup> wherein phenyl and heteroaryl moieties are unsubstituted or substituted with a substituent selected from halogen, methyl, cyano and amino, and pharmaceutically acceptable salts thereof.

6. The compound according to Claim 5, wherein: R<sup>2</sup> is methyl, X is -CH<sub>2</sub>-, Ar<sup>1</sup> is 4-

chlorophenyl, and Ar<sup>2</sup> is 3-cyanophenyl.

7. The compound according to Claim 1 selected from: 3-(1(S)-(4-chlorobenzyl)-2(S)-((2-hydroxy-2-methyl-1-phenylpropyl)amino)propyl)benzonitrile, methyl ((3-(4-chlorophenyl)-2(S)-(3-cyanophenyl)-1(S)-methyl-propyl)amino)(phenyl)acetate, 3-(1(S)-1-(4-chlorobenzyl)-2(S)-((2-hydroxy-1-phenylethyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((2-methoxy-1-phenylethyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-chlorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,5-difluorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)-benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2-chlorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)-benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-chlorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)-benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2,4-difluorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,4-difluorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2-chloro-4-fluorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2-fluoro-4-chlorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-fluorophenyl)-2-hydroxy-2-methyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-(((1-hydroxycyclobutyl)-(3,5-difluorophenyl)methyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-(((1-hydroxycyclohexyl)-(3,5-difluorophenyl)methyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,5-difluorophenyl)-2-hydroxy-2-ethyl-butyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,5-difluorophenyl)-2-hydroxy-2-methoxymethyl-propyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,5-difluorophenyl)-2-hydroxy-propyl)amino)propyl)-benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-3-hydroxy-2,2-dimethylpropyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-acetylaminopropyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-t-butyloxycarbonylaminoethyl)-amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-aminoethyl)-amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-cyanoethyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-methylpropyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,5-difluorophenyl)-2-cyano-2-methylpropyl)amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-methanesulfonylethyl)amino)propyl)benzonitrile, and pharmaceutically acceptable salts thereof.

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8. The compound according to Claim 1 selected from: 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-(1H-pyrazol-1-yl)ethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((2-methyl-1-phenyl-2-(1H-pyrazol-1-yl)propyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-phenyl-2-(1H-1,2,4-triazol-1-yl)ethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((2-oxopyridin-1(2H)-yl-1-phenyl-ethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-biphenyl-4-yl-2-cyanoethylamino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-

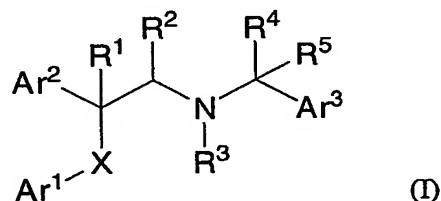
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((1-biphenyl-4-yl-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-bromophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-chlorophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-fluorophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-chlorophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-trifluoromethylphenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-trifluoromethylphenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methylphenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methoxycarbonylphenyl)-2-cyanoethyl) amino)propyl) benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-trifluoromethoxyphenyl)-2-cyanoethyl) amino)propyl) benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methylphenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2-chlorophenyl)-2-cyanoethyl) amino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,4-dichlorophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-cyanophenyl)-2-cyanoethyl) amino) propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-cyanophenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-cyclohexyl-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methylthiophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-cyanophenyl)-2-cyanoethyl) amino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methoxyphenyl)-2-cyanoethyl) amino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methylthiophenyl)-2-cyanoethyl) amino)propyl)benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-biphenyl-3-yl-2-cyanoethyl) amino)propyl)benzonitrile, 64523-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-dimethylaminocarbonylphenyl)-2-cyanoethyl) amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-dimethylaminocarbonylphenyl)-2-cyano-2-methylpropyl)amino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-pyrrol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-pyrazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-imidazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-chlorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile, 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-fluorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-chlorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-chlorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-trifluoromethylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-trifluoromethylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methoxycarbonylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile

- (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-trifluoromethoxyphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-cyanophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile
- 5 (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3,4-dichlorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(2-chlorophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methylthiophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methoxyphenyl)-2-cyano-2-
- 10 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methylthiophenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-phenylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-bromophenyl)-2-cyano-2-
- 15 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-cyclohexyl-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-pyrazol-3-yl)phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-pyridin-4-yl-phenyl)-2-cyano-2-
- 20 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-pyridin-3-yl-phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4'-cyanobiphen-4-yl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-pyrimidin-5-yl-phenyl)-2-cyano-2-
- 25 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(2-fluoropyridin-4-yl)-phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4'-cyanobiphen-3-yl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-pyridin-3-yl-phenyl)-2-cyano-2-
- 30 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-pyrimidin-5-yl-phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-pyridin-4-yl-phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-pyrazol-3-yl)-phenyl)-2-cyano-2-
- 35 methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3'-cyanobiphen-3-yl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methanesulfonylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-methanesulfinylphenyl)-2-cyano-2-
- methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methanesulfonylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-methanesulfinylphenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile

(diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-1,2,4-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl) amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-1,2,5-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-1,2,3-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino)propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-1,2,4-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-1,2,5-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-1,2,3-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-pyrazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-pyrazol-3-ylamino)phenyl)-2-cyano-2-methylpropyl)amino)propyl) benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(1H-1,2,4-triazol-3-ylamino)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(4-(3-amino-1H-1,2,4-triazol-1-yl)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-pyrazol-3-ylamino)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(1H-1,2,4-triazol-3-ylamino)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), 3-(1(S)-(4-chlorobenzyl)-2(S)-((1-(3-(pyridine-2-ylamino)phenyl)-2-cyano-2-methylpropyl)amino) propyl)benzonitrile (diastereomer A), and pharmaceutically acceptable salts thereof.

9. A compound of structural formula I:



or a pharmaceutically acceptable salt thereof, wherein:

25 R<sup>1</sup> is selected from:

- (1) hydrogen,
- (2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents,
- (3) halogen, and
- (4) -OR<sup>d</sup>;

30 R<sup>2</sup> is selected from:

- (1) hydrogen,

(2) C<sub>1-4</sub>alkyl, and

(3) aryl,

wherein each alkyl and aryl moiety is unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents;

R<sup>3</sup> is selected from:

- 5 (1) hydrogen, and  
(2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents;

R<sup>4</sup> is selected from:

- (1) hydrogen,  
 (2) C<sub>1-10</sub>alkyl,  
 10 (3) C<sub>2-10</sub>alkenyl,  
 (4) C<sub>2-10</sub>alkynyl,  
 (5) C<sub>1-10</sub>alkyloxycarbonyl-, and  
 (6) C<sub>3-10</sub>cycloalkyl,

wherein each alkyl, alkenyl, and alkynyl moiety is unsubstituted or substituted with one to four  
 15 substituents independently selected from R<sup>a</sup> and each cycloalkyl moiety is unsubstituted or  
 substituted with one, two or three substituents independently selected from R<sup>b</sup>;

R<sup>5</sup> is selected from:

- (1) hydrogen, and  
 (2) C<sub>1-4</sub>alkyl, unsubstituted or substituted with 1, 2 or 3 R<sup>e</sup> substituents;

20 Ar<sup>1</sup> is selected from:

- (1) C<sub>1-10</sub>alkyl,  
 (2) C<sub>2-10</sub>alkenyl,  
 (3) C<sub>2-10</sub>alkynyl,  
 (4) C<sub>3-10</sub>cycloalkyl,  
 25 (5) cycloheteroalkyl,  
 (6) aryl, and  
 (7) heteroaryl,

wherein each alkyl, alkenyl, and alkynyl moiety is unsubstituted or substituted with one to three  
 substituents independently selected from R<sup>a</sup>,

30 each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents  
 independently selected from R<sup>b</sup>, and

each cycloalkyl and cycloheteroalkyl moiety is unsubstituted or substituted with one to four  
 substituents independently selected from R<sup>b</sup> and oxo;

Ar<sup>2</sup> is selected from:

- 35 (1) -OR<sup>d</sup>,

- (2)  $-\text{CO}_2\text{R}^d$ ,
- (3)  $\text{C}_{3-10}\text{cycloalkyl}$ ,
- (4)  $\text{cycloheteroalkyl}$ ,
- (5)  $\text{aryl}$ , and
- (6)  $\text{heteroaryl}$ ,

wherein each cycloalkyl, cycloheteroalkyl moiety is unsubstituted or substituted with one to four substituents independently selected from  $\text{R}^b$  and  $\text{oxo}$ ; and each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from  $\text{R}^b$ ;

$\text{Ar}^3$  is selected from:

- (1)  $\text{aryl}$ , and
- (2)  $\text{heteroaryl}$ ,

wherein each aryl and heteroaryl moiety is unsubstituted or substituted with one to four substituents independently selected from  $\text{R}^b$ ;

$\text{X}$  is selected from:

- (1) a bond,
- (2)  $\text{C}_{1-4}\text{alkyl}$ ,
- (3) oxygen,
- (4) sulfur, and
- (5)  $-\text{NRC}-$ ,

provided that when  $\text{X}$  is oxygen, sulfur, or  $-\text{NRC}-$ , then  $\text{R}^1$  is hydrogen or  $\text{C}_{1-4}\text{alkyl}$  and  $\text{Ar}^2$  is not  $-\text{OR}^d$ ;

each  $\text{R}^a$  is independently selected from:

- (1)  $-\text{OR}^d$ ,
- (2)  $-\text{NR}^c\text{S}(\text{O})_m\text{R}^d$ ,
- (3) halogen,
- (4)  $-\text{SR}^d$ ,
- (5)  $-\text{S}(\text{O})_m\text{R}^d$ ,
- (6)  $-\text{S}(\text{O})_m\text{NR}^c\text{R}^d$ ,
- (7)  $-\text{NR}^c\text{R}^d$ ,
- (8)  $-\text{C}(\text{O})\text{R}^d$ ,
- (9)  $-\text{CO}_2\text{R}^d$ ,
- (10)  $-\text{CN}$ ,
- (11)  $-\text{C}(\text{O})\text{NR}^c\text{R}^d$ ,
- (12)  $-\text{NR}^c\text{C}(\text{O})\text{R}^d$ ,
- (13)  $-\text{NR}^c\text{C}(\text{O})\text{OR}^d$ ,

(14)  $\text{-NR}^c\text{C}(\text{O})\text{NR}^d\text{R}^d$ ,

(15)  $\text{-CF}_3$ ,

(16)  $\text{-OCF}_3$ , and

(17) cycloheteroalkyl;

5 each  $\text{R}^b$  is independently selected from:

(1)  $\text{R}^a$ ,

(2)  $\text{C}_{1-10}$ alkyl,

(3) aryl,

(4) aryl $\text{C}_{1-4}$ alkyl,

10 (5) heteroaryl, and

(6) heteroaryl $\text{C}_{1-4}$ alkyl;

$\text{R}^c$  and  $\text{R}^d$  are independently selected from:

(1) hydrogen,

(2)  $\text{C}_{1-10}$ alkyl,

15 (3)  $\text{C}_{2-10}$  alkenyl,

(4) cycloalkyl,

(5) cycloalkyl- $\text{C}_{1-10}$ alkyl-,

(6) cycloheteroalkyl,

(7) cycloheteroalkyl- $\text{C}_{1-10}$ alkyl-,

20 (8) aryl,

(9) heteroaryl,

(10) aryl- $\text{C}_{1-10}$ alkyl-, and

(11) heteroaryl- $\text{C}_{1-10}$ alkyl-, or

25  $\text{R}^c$  and  $\text{R}^d$  together with the atom(s) to which they are attached form a heterocyclic ring of 4 to 7 members containing 0-2 additional heteroatoms independently selected from oxygen, sulfur and N- $\text{R}^g$ , each  $\text{R}^c$  and  $\text{R}^d$  are unsubstituted or substituted with one to three substituents selected from  $\text{R}^h$ ;

$\text{R}^e$  is selected from:

(1) hydroxy,

(2) methoxy-,

30 (3) trifluoromethoxy-,

(4) methylcarbonyloxy-,

(5) halogen, and

(6) cyano;

each  $\text{R}^g$  is independently selected from

35 (1)  $\text{C}_{1-10}$ alkyl, and

(2)  $-C(O)R^i$ ;

each  $R^h$  is independently selected from:

- (1) halogen,
- (2)  $C_{1-10}$ alkyl,
- 5 (3)  $-O-C_{1-4}$ alkyl,
- (4)  $-S-C_{1-4}$ alkyl,
- (5)  $-CN$ ,
- (6)  $-NO_2$ ,
- (7)  $-CF_3$ , and
- 10 (8)  $-OCF_3$ ;

each  $R^i$  is independently selected from:

- (1) hydrogen,
- (2)  $C_{1-10}$ alkyl,
- (3)  $C_{2-10}$ alkenyl,
- 15 (4) cycloalkyl,
- (5) cycloalkyl- $C_{1-10}$ alkyl-,
- (6) cycloheteroalkyl,
- (7) cycloheteroalkyl- $C_{1-10}$ alkyl-,
- (8) aryl,
- 20 (9) heteroaryl,
- (10) aryl- $C_{1-10}$ alkyl-, and
- (11) heteroaryl- $C_{1-10}$ alkyl-; and

$m$  is selected from 1 and 2.

25 10. A composition comprising a compound according to Claim 1 and a pharmaceutically acceptable carrier.

11. The use of a compound according to Claim 1, for the manufacture of a medicament  
useful for the treatment of a disease mediated by the Cannabinoid-1 receptor in a human patient in need  
30 of such treatment.

12. The use according to Claim 11 wherein the disease mediated by the Cannabinoid-1  
receptor is selected from: psychosis, memory deficit, cognitive disorders, migraine, neuropathy, neuro-  
inflammatory disorders, cerebral vascular accidents, head trauma, anxiety disorders, stress, epilepsy,  
35 Parkinson's disease, schizophrenia, substance abuse disorders, constipation, chronic intestinal pseudo-

obstruction, cirrhosis of the liver, asthma, obesity, and other eating disorders associated with excessive food intake.

13. The use according to Claim 12 wherein the disease mediated by the Cannabinoid-1  
5 receptor is selected from obesity, bulimia nervosa, and compulsive eating disorders.

14. The use according to Claim 13 wherein the eating disorder associated with excessive food intake is obesity.

10 15. The use of a compound according to Claim 1 for the manufacture of a medicament for the prevention of obesity in a person at risk therefor.